Prof. Pavel Martásek, MD, DSc

Director of BIOCEV – Biotechnology and Biomedicine Center

In his scientific work, Prof. Martásek utilizes his personal clinical experience, his extensive knowledge of internal medicine with a special focus on diseases with a hereditary component, and also his experience from active research in the field of pathobiochemistry. Interest in the study of the molecular basis of diseases led Prof. Martásek into the field of molecular and structural biology. Prof. Martásek is an internationally renowned expert in the research field of structural-functional determinants of the synthesis of gaseous molecules, which are important agents in normal and pathologic conditions, and in the field of heme synthesis and degradation.

His deep insight into many metabolic pathways in health and disease, personal discoveries in the cloning of genes responsible for inherited diseases and protein, and recombinant protein purification at the beginning of the nineties led to the collaboration of Dr. Martásek with many prominent scientific teams in Europe, USA and Japan and enabled his primary direction of and participation in many collaborative research projects (INSERM, NIH). He spent many years as a visiting professor at the University of Paris VII, at universities in New York and Texas, and as a scientist at the Jacques Monod Institute in Paris.

Prof. Martásek was a co-founder of the European porphyria initiative, which grew into an important European project dedicated to the study of porphyrias as representatives of rare diseases, which collectively represent a very important healthcare and social problem, and led to the treatment and proposal of novel drug therapies of these diseases.

Due to his extensive knowledge of metabolic pathways in health and disease and the molecular pathology of certain diseases, Prof. Martásek will provide expertise in the 5th Research Programme in the field of medical applications ranging from diagnostic reflections to the proposal of novel treatment methods and applications. His widely active research programme will allow Prof. Martásek efficient communication in the framework of all BIOCEV scientific programmes and in interactions with national and international partners in the field of biomedical applications.

Citation report:

Number of articles (according to WoS):	483 entries; 219 papers
Number of citations (according to WoS):	7 900
H-Index:	41
Number of patents:	5

Selected publications:

Martasek P., Camadro J.M., Delfau-Larue M.H., Dumas J.B., Montagne J.J., Verneuil H.de, Labbe P., Grandchamp B.: Molecular cloning, sequencing and functional expression of a cDNA encoding human coproporphyrinogen oxidase. Proc. Natl. Acad. Sci. USA 91: 3024-3028, 1994.

Silverman R.B., Huang H., Marletta M.A., **Martasek P.:** Selective inhibition of neuronal nitric oxide synthase by N□-nitroarginine- and phenylalanine-containing dipeptides and dipeptide esters. J. Med. Chem. 40, 2813-2817, 1997.

García-Cardeña G., **Martasek P.,** Masters B.S.S., Skidd P.M., Couvet J., Li S., Lisanti M.P., Sessa W.C.: Dissecting the interaction between nitric oxide synthase and caveolin: functional significance of the NO caveolin binding domain *in vivo.* J. Biol. Chem., 272, 25437-25440, 1997.

Raman C.S., Li H., **Martasek P.,** Kral V., Masters B.S.S., Poulos T.L.: Crystal structure of constitutive endothelial nitric oxide synthase. A paradigm for proterin function involving a novel metal cofactor. Cell, 95, 939-950, 1998.

Jachymova M., **Martasek P.,** Panda S., Roman L.J., Panda M., Shea T.M., Ishimura Y., Kim J-J., Mastars B.S.S.: Recruitment of governing elements for electron transfer in the nitric oxide synthase family. Proc. Natl. Acad. Sci. USA, 102, 15833-15838, 2005.

Lee D-S., Flachsova E., Bodnarova M., Demeler B., **Martasek P.,** Raman C.S.: Structural basis of hereditary coproporphyria. Proc. Natl. Acad. Sci. USA, 102, 14232-14237, 2005.

Mikula I., Durocher S., **Martasek P.**, Mutus B., Slama-Schwok A.: Isoform-specific differences in the nitrite reductase activity of nitric oxide synthases under hypoxia. Biochem J., 418 (3): 673-682, 2009.

Ulbrichova D., Hrdinka M., Saudek V., **Martasek P.**: Acute intermittent porphyria – impact of mutations found in the hydroxymethylbilane synthese gene on biochemical and enzymatic protein properties. FEBS J., 276: 2106-2115, 2009.

Kralova J., Kejik Z., Briza T., Pouckova P., Kral A., **Martasek P.**, Kral V.: Porphyrin-cyclodextrin conjugates as a nanosystem for versatile drug delivery and multimodal cancer therapy. J. Med. Chem., 53: 128-138, 2010.

Xia C.W., Panda S.P., Marohnic C.C., **Martasek P.,** Masters B.S., Kim J.J.P.: Structural basis for human NADPH-cytochrome P450 oxidoreductase deficiency. Proc. Natl. Acad. Sci. USA, 108: 13486-15491, 2011.

Tomkova M., Marohnic C.C., Gurwitz D., Seda O., Masters B.S.S., **Martasek P.:** Identification of six novel P450 oxidoreductase missense variants in Ashkenazi and Maroccan Jewish populations. Pharmacogenomics, 13: 543-554, 2012.

Kaplanek R., **Martasek P.,** Gruner B., Panda S., Rak J., Masters B.S.S., Kral V., Roman L.J.: Nitric oxide synthases activation and inhibition by metallocarborane-cluster-based isoform-specific affectors. J. Med. Chem., 55: 9541-9548, 2012.

Rimpelova S., Briza T., Kralova J., Zaruba K., Kejik Z., Cisarova I., **Martasek P.,** Ruml T., Kral V.: Rational Design of chemical ligands for selective mitochondrial targeting. Bioconjugate Chem., 24: 1445-1454, 2013.